THE CONDITIONS OF HEALTH AND LONG LIFE

WITH PRACTICAL DIRECTIONS FOR THEIR PRESERVATION AND ATTAINMENT.

BY ROBERT CHAMBERS
OF EDINBURGH,
EDITOR OF "CHAMBERS'S MISCELLANY," ETC. ETC.

WITH NOTES AND ADDITIONS
BY THE AMERICAN EDITOR.

NEW YORK:
WM. TAYLOR & CO., No. 2 ASTOR HOUSE.
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PREFACE.

Every man is accountable, in a much greater degree than is generally supposed, for his health. We often hear it said, that the deaths of the young and gifted are mysterious dispensations of Providence; when if Physiology were questioned, she might prove that they had fallen victims to their own neglect or violation of laws to which inevitable penalties have been attached, and which have been imposed upon our nature for our benefit.

The truth and reasonableness of these views are powerfully set forth in the present treatise, which, with slight variations and improvements, is from the pen of Robert Chambers, of Edinburgh, one of the most practical and intelligent writers of the age. We think that no one can peruse his excellent advice in regard to the preservation or recovery of health, without acknowledging its value, and the force of language with which it is administered.

In no country are the hints with which this treatise abounds more needed than in our own, where brain and body are so severely tasked to serve the passion of acquisition, or the nobler purposes of philanthropy and public enterprise. It will here be seen, that all the faculties should be harmoniously developed for the accomplishment of the healthy man; and that exclusive, unrelaxed

devotion to a single idea or pursuit, is exerted at the expense of functions which the Creator intended equally for use. It will thus be inferred, that while inertness of mind and body is detrimental to both, there is an extravagant and exclusive activity equally inconsistent with good sense and morality.

It will also be found that many of the amusements and means of relaxation, which an unenlightened bigotry looks upon as inconsistent with genuine piety, are in fact demanded by the highest necessities of our nature; and, when regulated by reason, should be regarded as conducive both to our moral and physical well-being. We beseech our countrymen to consider well the important views here set forth; for we believe they will bear the combined test of experience, philosophy and true religion.

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HEALTH AND LONG LIFE.

CHAPTER I.

The conditions essential to health—Pure air---Miasma from standing water---Other sources of noxious effluvia---Probable origin of the Plague---Old drains---Consumption of oxygen---The Black Hole of Calcutta---Importance of ventilation---Artificial means of ventilating rooms.

A HUMAN being, supposing him to be soundly constituted at first, will continue in health till he reaches old age, provided that certain conditions are observed, and no injurious accident shall befall. This is a proposition so well supported by an extensive observation of facts, that it may be regarded as established.

It becomes, then, important to learn what are the conditions essential to health, in order that, by their observance, we may preserve for ourselves what is justly esteemed as the greatest of earthly blessings, and dwell for our naturally appointed time upon the earth. A general acquaintance with these conditions may be

easily attained by all, and to pay them obedience is much more within the power of individuals than is generally supposed.

The leading conditions essential to health may be thus enumerated;—1. A constant supply of pure air; 2. A sufficiency of nourishing food, rightly taken; 3. Cleanliness; 4. A sufficiency of exercise to the various organs of the system; 5. A right temperature; 6. A sufficiency of cheerful and innocent enjoyments; and, 7. Exemption from harassing cares.

The common air is a fluid composed mainly of two gases in certain proportions; namely, oxygen as 20 and nitrogen as 80 parts in a hundred, with a very minute addition of carbonic acid gas. Such is air in its pure and right state, and such is the state in which we require it for respiration. When it is loaded with any admixture of a different kind, or its natural proportions are in any way deranged, it cannot be breathed without producing injurious results We also require what is apt to appear a large quantity of this element of healthy existence. The lungs of a healthy full-grown man will inhale the bulk of twenty cubic inches at every inspiration, and he will use no less than fifty-seven hogsheads in twenty-four hours.

Now, there are various circumstances which tend to surround us at times with vitiated air, and which must accordingly be guarded against. That first calling for attention is the miasma or noxious quality imparted to the air in certain districts by stagnant water and decaying vegetable matter. It is now generally acknowledged that this noxious quality is in reality a subtle poison, which acts on the human system through the medium of the lungs, producing fevers and other epidemics. A noted instance of its acting on a great scale is presented in the Campagna di Roma, where a large surface is retained in a marshy state. The air arising from that territory at certain seasons of the year, obliges the inhabitants of the adjacent districts of the city to desert their homes, in order to escape its pernicious influence. All marshes, and low damp grounds of every kind, produce more or less miasma, and it is consequently dangerous to live upon or near them. Slightly elevated ground should, accordingly, in all cases be chosen for both single houses and towns. Tanks and collections of water of every kind are dangerous beneath or near a house, because, unless their contents be constantly in a state of change, which is rarely the case, their tendency is to

send up exhalations of a noxious kind. A few years ago, the eldest son of an English nobleman, Earl Fitzwilliam, died of a fever which was traced to the opening of an old reservoir of water underneath the country house in which he dwelt.

Putrid matter of all kinds is another conspicuous source of noxious effluvia. The filth collected in ill-regulated towns—in ill-managed drains—collections of decaying animal substances, placed too near or within private dwellings—are notable for their effects in vitiating the atmosphere, and generating disease in those exposed to them. In this case, also, it is a poison diffused abroad through the air which acts so injuriously on the human frame. This was probably the main cause of the plagues which visited European cities during the middle ages. In those days there were no adequate provisions for cleaning cities, and the consequence was, that large collections of filth were accumulated. The noxious air diffused by these means through the narrow streets and confined dwellings, would tend to the most fatal effects.

In old drains there is generated a gas (sulphureted hydrogen), which is calculated to produce dreadful consequences amongst those ex-

posed to it. It has lately been discovered, that it is the presence of this gas in the sea near the eastern coast of tropical Africa, which causes the peculiar unhealthiness of that region. It is ascertained that small animals, such as birds, die, when the air they breathe contains one fifteen-hundreth part of sulphureted hydrogen, and that an infusion six times greater will kill a horse. It follows, that we can scarcely attach too much importance to measures for cleaning cities and improving drains.

The human subject tends to vitiate the atmosphere for itself, by the effect which it produces on the air which it breathes. Our breath, when we draw it in, consists of the ingredients formerly mentioned; but it is in a very different state when we part with it. On passing into our lungs, the oxygen, forming the lesser ingredient, enters into combination with the carbon of the venous blood (or blood which has already performed its round through the body); in this process, about two-fifths of the oxygen is abstracted and sent into the blood, only the remaining three-fifths being expired, along with the nitrogen nearly as it was before.

In place of the oxygen consumed, there is expired an equal volume of carbonic acid gas,

such gas being a result of the process of combination just alluded to. Now, carbonic acid gas, in a larger proportion than that in which it is found in the atmosphere, is noxious. The volume of it expired by the lungs, if free to mingle with the air at large, will do no harm; but, if breathed out into a close room, it will render the air unfit for being again breathed. Suppose an individual to be shut up in an air-tight box; each breath he emits throws a certain quantity of carbonic acid gas into the air filling the box; the air is thus vitiated, and every successive inspiration is composed of worse and worse materials, till at length the oxygen is so much exhausted, that it is insufficient for the support of life. He would then be sensible of great difficulty in breathing, and in a little time longer he would die.

Most rooms in which human beings live are not strictly close. The chimney and the chinks of the door and windows generally allow of a communication to a certain extent with the outer air, so that it rarely happens that great immediate inconvenience is experienced in ordinary apartments from want of fresh air. But it is at the same time quite certain that, in all ordinary apartments where human beings are as-

sembled, the air unavoidably becomes *considerably vitiated*, for in such a situation there cannot be a sufficiently ready or copious supply of oxygen to make up for that which has been consumed, and the carbonic acid gas will be constantly accumulating.—This is particularly the case in bedrooms, and in theatres, churches, and schools. An extreme case was that of the celebrated Black Hole of Calcutta, where a hundred and forty-six persons were confined for a night in a room eighteen feet square, with two small windows. Here the oxygen scarcely sufficient for the healthy supply of one person, was called upon to support a large number. The unfortunate prisoners found themselves in a state of unheard-of suffering, and in the morning all were dead but twenty-three, some of whom afterwards sank under putrid fever brought on by breathing so long a tainted atmosphere.

Although the vitiation of the air in ordinary apartments and places of public assembly does not generally excite much attention, it nevertheless exercises a certain unfavorable influence on health in all the degrees in which it exists. Perhaps it is in bedrooms that most harm is done.—These are generally smaller than other

rooms, and they are usually kept close during the whole night. The result of sleeping in such a room is very injurious. A common fire, from the draught which it produces, is very serviceable in ventilating rooms, but it is at best a defective means of doing so. The draught which it creates generally sweeps along near the floor between the door and the fire, leaving all above the level of the chimney-piece unpurified. Yet scarcely any other arrangement is any where made for the purpose of changing the air in ordinary rooms. To open the window is a plan occasionally resorted to, but it is not always agreeable in our climate, and sometimes it produces bad consequences of a different kind.

It would nevertheless be easy to produce an effective draught from any room in which a fire is kept. It is only necessary to make an aperture into the flue, near the ceiling of the room, and insert therein a tin tube with a valve at the exterior, capable of opening inwards, but closing when at rest or when a draught is sent the contrary way. The draught produced by the fire in the flue would cause a constant flow of air out of the *upper part* of the room (where most vitiated); and the valve would be an effectual protection against back-smoke, should there be

the least tendency to it. This plan is adopted in Buckingham Palace; and the new halls of Parliament are ventilated after a most thorough and ingenious manner. The process could be applied to any existing house at a mere trifle of expense.

A more effectual plan, and one which operates when there is no fire in the room, is to establish a tin tube of two or three inches diameter out of each apartment to be ventilated, causing them all to meet in one general tube, the extremity of which passes into some active flue—for example, that of the kitchen, which is rarely cold. Thus there might be a constant passing of fresh air into and through every room of a large house, so that it would be at all times as healthy in this respect as the open fields. At the same time, the supply might, by means of graduated valves, be regulated to any degree which might be deemed agreeable.

Who that has once felt the difference between the refreshing effects of the morning air and the disagreeable odour perceptible on entering the bedroom of another in the morning, can doubt the pestiferous effects of animal effluvia, and of crowded and ill-ventilated apartments?

CHAPTER II.

Food---Man designed to live on a mixed diet—The Pythagorean doctrine in regard to eating flesh opposed to nature---Rules connected with eating---Importance of knowing how to eat---New England habit of hurrying through meals---The process of digestion---Use of the saliva---Extraordinary cases---Case related by Beaumont—Fast eating injurious---Gluttony---Causes of heartburn and dyspepsia—Consequences of crowding the stomach with food---Cases in point.

The second requisite for the preservation of health is a sufficiency of nutritious food.

Organic bodies, in which are included vegetables as well as animals, are constituted upon the principle of *a continual waste of substance supplied by continual nutrition.*

The Nutritive System of animals, from apparently the humblest of these to the highest, comprehends an *alimentary tube or cavity*, into which food is received, and from which, after undergoing certain changes, it is diffused by means of smaller vessels throughout the whole structure. In the form of this tube, and in the other apparatus connected with the taking of food, there are, in different animals, varieties of structure, all of which are respectively in conformity with peculiarities in the quality and a

mount of food which the particular animals are designed to take. The harmony to be observed in these arrangements is remarkably significant of that Creative Design to be traced in all things.

Some animals are formed to live upon vegetable substances alone; others are calculated to live upon the flesh of other animals. Herbivorous animals, as the former are called, have generally a long and complicated alimentary tube, because the nutritious part of such food, being comparatively small in proportion to the whole bulk, requires a greater space in which to be extracted and absorbed into the system. The sheep, for example, has a series of intestines twenty-seven times the length of its body.

For the opposite reasons, carnivorous or flesh-devouring animals, as the feline tribe of quadrupeds, and the rapacious birds, have generally a short intestinal canal. The former class of animals are furnished with teeth, calculated by their broad and flat surfaces, as well as by the lateral movement of the jaws in which they are set, to mince down the herbage and grain eaten by them. But the carnivorous animals, with wide-opening jaws, have long and sharp fangs to seize and tear their prey. These peculiarities of structure mark sufficiently the designs of

nature with respect to the kinds of food required by the two different classes of animals for their support.

The human intestinal canal being of medium length, and the human teeth being a mixture of the two kinds, it necessarily follows that man was designed to eat both vegetable and animal food. As no animal can live agreeably or healthily except in conformity with the laws of its constitution, it follows that man will not thrive unless with a mixture of animal and vegetable food. The followers of Pythagoras argued, from the cruelty of putting animals to death, that it was proper to live on vegetables alone; and many eccentric persons of modern times have acted upon this rule.

But the ordinances of Nature speak a different language; and, if we have any faith in these, we cannot for a moment doubt that a mixture of animal food is necessary for our well-being. On the other hand, we cannot dispense with vegetable food without injurious consequences. In that case, we place in a medium alimentary canal a kind of food which is calculated for a short one, thus violating an arrangement of the most important nature. A balance between the two kinds of food is what we should ob-

serve, if we would desire to live a natural and consequently healthy life.

In order fully to understand how to eat, and how to conduct ourselves after eating, it is necessary that we should be acquainted in some measure with the *process of nutrition*—that curious series of operations by which food is received and assimilated by our system, in order to make good the deficiency produced by sweat.

Food is first received into the mouth, and there the operations in question may be said to commence. It is there to be chewed (or masticated) and mixed with saliva, preparatorily to its being swallowed or sent into the stomach. Even in this introductory stage, there are certain rules to be observed. Strange as it may appear, to know *how to eat* is a matter of very considerable importance.

Many persons, thinking it all a matter of indifference, or perhaps unduly anxious to dispatch their meals, eat very fast. If we are to believe the accounts of travellers, the whole of the mercantile classes in New England eat hurriedly, seldom taking more than ten minutes to breakfast, and a quarter of an hour to dinner. They tumble their meat precipitately into their

mouths, and swallow it almost without mastication. This is contrary to an express law of nature, as may be easily shown.

Food, on being received into the mouth, has two processes to undergo, both very necessary to digestion. It has to be masticated, or chewed down, and also to receive an admixture of saliva. The saliva is a fluid arising from certain glands in and near the mouth, and approaching in character to the gastric juice afterwards to be described. Unless food be well broken down or masticated, and also well mixed up with the salivary fluid, it will be difficult of digestion.—The stomach is then called upon to do, besides its own proper duty, that which properly belongs to the teeth and saliva, and it is thus overburdened and embarrassed, often in a very serious manner. The pains of indigestion are the immediate consequence, and more remote injuries follow.

The importance of the saliva has been shown in a striking manner, on several occasions when food was received into the stomach otherwise than through the mouth. A gentleman, who, in consequence of a stricture in the gullet, had his food introduced by an aperture into that tube, used to suffer severely from indigestion. It is

recorded of a criminal, who having cut his throat in prison without fatal consequences, required to get his food introduced by means of a tube inserted by the mouth, that every time he was fed, there was an effusion of saliva to the amount of from six to eight ounces. We cannot suppose that a fluid of a peculiar character would have been prepared in such quantity, when water would serve as well merely to wet the food, if it had not been designed to act an important part in the business of nutrition.

With regard to mastication, the evidence of its importance is still more clear. A few years ago, a young Canadian, named Alexis St. Martin, had a hole made by a shot into his stomach, which healed without becoming closed. It was therefore possible to observe the whole operations of the stomach with the eye. His medical attendant, Dr. Beaumont, by these means ascertained that, when a piece of solid food was introduced, the gastric juice acted merely on its outside. It was only when the food was comminuted, or made *small*, that this fluid could fully perform its function. When the stomach finds itself totally unable to digest a solid piece of food, it either rejects it by vomiting, or passes it on into the gut, where it produces an irri-

tating effect, and is apt to occasion an attack of cholic or flatulency.

It is therefore to be concluded that *a deliberate mastication of our food is conducive to health, and that fast eating is injurious, and sometimes even dangerous.*

In this country, such is the eagerness with which wealth is pursued, that we are apt to begrudge the time that should be given to the task of chewing, and to call upon the stomach to perform an office that should have been discharged by the teeth. We soon reap the inevitable penalty of this violation of nature's laws in a deranged state of the digestive functions, which perhaps the attention of years will not remedy. An over-eagerness in swallowing food is one of the most fertile sources of dyspepsia. We should masticate deliberately and thoroughly, and swallow slowly, and in small quantities. The demands of politeness as well as of health, should induce us to observe this rule.

CHAPTER III.

Explanation of the digestive process continued---The second stage ---Chyme---Substances most readily converted into chyme---The Peristaltic motion of the intestines---Office of the bile---The blood ---Secretion of the gastric juice---Avoid severe exercise immediately after eating---Also, immediately before eating---The rule observed in regard to animals---Advice of Dr. Combe.

"DRUNKENNESS," says Dr. Kitchener, "is deplorably destructive; but her demure sister, Gluttony, destroys *a hundred for her one.*"

Gluttony, or excess of food, robs the stomach of its vital principle, by debilitating or diminishing its muscular and digestive powers. And this is not the whole of the mischief; for the numerous fine vessels, tubes and canals, which the hand of Nature has formed and spread throughout our most astonishing frame, are all choked and overloaded, and of course the seeds of fatal and malignant distempers are implanted in our bodies; which incapacitating Nature from performing her regular functions with facility and efficiency, the body is soon converted into an universal infirmary.

It is not the quantity of food, but its healthy digestion, which gives strength and nutriment

to the body, and repairs its constant and unceasing wear and tear. All food, before it can be digested, must be decomposed and resolved into its primitive elementary constituents; if not digested, it becomes excrement, instead of aliment; and if it be not speedily evacuated, it corrupts and disorders the system, and occasions disease. The following statement will clearly elucidate this process and its *modus operandi* in the animal economy.

The chief cause of most of the diseases to which the human body is subject, is a superabundant acid in the stomach; and that superabundance of acid is occasioned by overloading the stomach with food or drink. For the stomach can digest only a certain portion of food in a given time, namely, that which is in contact with its sides; all the rest must wait its turn; consequently, if the stomach be overloaded, the superabundant food will ferment and generate an acid; and the portion of food thus fermented and converted into acid, when it comes, in its turn, to be spread over the sides of the stomach, for the purpose of being converted into chyme, frets and irritates the stomach by its acrid and corrosive qualities, and very often produces inflammation, more or less violent, which is indi-

cated either by heartburn, eructation, stomach-ache, or other distressing sensations.

Nor is this the whole of the injury. If the effects of the acid be not arrested, all the organs which sympathize with the stomach, partake of the distress, in proportion to their previous constitutional strength or debility. Numerous instances occur in medical annals of death having been occasioned by inordinate eating. Sir Everard Home mentions an instance of a child losing its life from eating too large a quantity of apple pudding. Morgagni relates an account of a like fate happening to a woman from eating too large a quantity of onions preserved in salt and vinegar. And Bonnetus states the case of a boy, who died in three hours from eating immoderately of grapes. In each case, the stomach, when opened, was quite tense, and consequently its powers of action perfectly paralysed.

The food, having been properly masticated, is, by the action of the tongue, thrown into the gullet. It then descends into the stomach, not so much by its own gravity, as by its being urged along by the contractions and motions of the gullet itself. The stomach may be considered as an expansion of the gullet, and the chief

part of the alimentary canal. It is, in fact, a membranous pouch or bag, very similar in shape to a bagpipe, having two openings, the one by which the food enters, the other that by which it passes out. It is into the greater curvature of the bag that the gullet enters; it is at its lesser that it opens into that adjoining portion of the canal into which the half-digested mass is next propelled.

When food has been introduced, the two orifices close, and that which we may term the second stage in the process of digestion commences. The mass, already saturated with saliva, and so broken down as to expose all its particles to the action of the gastric juice, is now submitted to the action of that fluid, which, during digestion, is freely secreted by the vessels of the stomach. The most remarkable quality of this juice is its solvent power, which is prodigious.

The food exposed to this dissolving agency, is converted into a soft, grey, pulpy mass, called chyme, which, by the muscular contraction of the stomach, is urged on into the adjoining part of the alimentary canal, called the duodenum. This is generally completed in the space of from half an hour to two or three hours; the period

varying according to the nature and volume of the food taken, and the mastication and insalivation it has undergone.

In the duodenum, the chyme becomes intimately mixed and incorporated with the bile and pancreatic juices; also with a fluid secreted by the mucous follicles of the intestine itself. The bile is a greenish, bitter, and somewhat viscid fluid, secreted by the liver, which occupies a considerable space on the right side of the body immediately under the ribs. From this organ the bile, after a portion of it has passed up into the adjacent gall-bladder, descends through a small duct, about the size of a goose-quill, into the duodenum. The chyme, when mixed with these fluids, undergoes a change in its appearance; it assumes a yellow color and bitter taste, owing to the predominance of the bile in the mass; but its character varies according to the nature of the food that has been taken. Fatty matters, tendons, cartilages, white of eggs, &c., are not so readily converted into chyme as fibrous or fleshy, cheesy, and glutinous substances.

The chyme, having undergone the changes adverted to, is urged by the peristaltic motion of the intestines onwards through the alimenta-

ry canal. This vermicious motion of the intestines is caused by the contraction of the muscular coat which enters into their structure, and one of the principal uses ascribed to the bile is that of stimulating them to this motion. If the peristaltic motion be diminished, owing to a deficiency of bile, then the progress of digestion is retarded, and the body becomes constipated. In such cases, calomel, the blue pill, and other medicines, are administered, often improperly, however, for the purpose of stimulating the liver to secrete the biliary fluid, that it may quicken by its stimulating properties the peristaltic action. But this is not the only use of the bile; it also assists in separating the nutritious from the non-nutritious portion of the alimentary mass, for the chyme now presents a mixture of a fluid termed *chyle*, which is in reality the nutritious portion eliminated from the food. The chyme thus mixed with chyle arrives in the small intestines; on the walls of which a series of exquisitely delicate vessels ramify in every direction. These vessels absorb or take up the chyle, leaving the rest of the mass to be ejected from the body. The chyle, thus taken up, is carried into little bodies or glands, where it is still further elaborated, acquiring additional

nutritious properties; after which, corresponding vessels, emerging from these glands, carry along the fluid to a comparatively large vessel, called the thoracic duct, which ascends in the abdomen along the side of the back-bone, and pours it into that side of the heart to which the blood that has already circulated through the body returns. Here the chyle is intimately mixed with the blood, which fluid is now propelled into the lungs, where it undergoes, from being exposed to the action of the air we breathe, the changes necessary to render it again fit for circulation.

It is in the lungs, therefore, that the process of digestion is completed; the blood has now acquired those nutrient properties from which it secretes the new particles of matter adapted to supply the waste of the different textures of the body.

When food is received into the stomach, the secretion of the gastric juice immediately commences; and when a full meal has been taken, this secretion generally lasts for about an hour. It is a law of vital action, that when any living organ is called into play, there is immediately an increased flow of blood and nervous energy towards it. The stomach, while secreting the

bile, displays this phenomenon, and the consequence is that the blood and nervous energy are called away from other organs. This is the cause of that chillness at the extremities which we often feel after eating heartily. So great is the demand which the stomach thus makes upon the rest of the system, that, during and for some time after a meal, we are not in a condition to take strong exercise of any kind. Both body and mind are inactive and languid. They are so, simply because that which supports muscular and mental activity is concentrated for the time upon the organs of digestion. This is an arrangement of nature which a regard to health requires that we should not interfere with. *We should indulge in the muscular and mental repose which is demanded; and this should last for not much less than an hour after every meal.* In that time, the secretion of bile is nearly finished; the new nutriment begins to tell upon the general circulation; and we are again fit for active exertion. The consequence of not observing this rule, is very hurtful.

Strong exercise, or mental application, during or immediately after a meal, diverts the flow of nervous energy and of blood to the stomach, and the process of digestion is necessarily re-

tarded or stopped. Confusion is thus introduced into the system, and a tendency to the terrible calamity of dyspepsia, is perhaps established.

For the same reason that repose is required after a meal, it is necessary, in some measure, for a little while before. At the moment when we have concluded a severe muscular task, such, for example, as a long walk, the flow of nervous energy and of circulation is strongly directed to the muscular system. It requires some time to allow this flow to stop and subside; and, till this takes place, it is not proper to bring the stomach into exercise, as the demand which it makes when filled would not in that case be answered. Just so, if we be engaged in close mental application, the nervous energy and circulation being in that case directed to the brain, it is not right all at once to call another and distant organ into play; some time is required to allow of the energy and circulation being prepared to take the new direction. It may, therefore, be laid down as a maxim, that *a short period of repose, or at least of very light occupation, should be allowed before every meal.*

It is remarkable that these rules, although the

natural reasons for them were not, perhaps, well known, have long been followed with regard to animals upon which man sets a value, while as yet their application to the human constitution is thought of only by a few. Those intrusted with horses and dogs will not allow them to feed immediately after exercise; nor will they allow them to be subjected to exercise for some time after feeding. Experience has also instructed veteran soldiers not to dine the instant a long march has been concluded.

Although strong mental and muscular exercise should be avoided before, during, and immediately after a meal, there can be no objection to the light and lively chat which generally is indulged in where several are met to eat together.

Dr. Combe, in one of his invaluable works, observes as follows:—"The necessary churning, or agitation of the food, is, from the peculiar situation of the stomach, greatly assisted by the play of the diaphragm and abdominal muscles during inspiration and expiration; and the diminution of the vivacity and extent of the respiratory movement which always attends despondency and grief, is one source of the enfeebled digestion which notoriously accompanies

depression of mind. The same cause also leads necessarily to an unfavorable condition of the blood itself, which in its turn weakens digestion in common with every other function; but the muscular or mechanical influence is that which at present chiefly concerns us. On the other hand, the active and energetic respiration attendant on cheerfulness and buoyancy of spirits, adds to the power of digestion, both by aiding the motions of the stomach and by imparting to it a more richly constituted blood. If to these causes be added the increase of nervous stimulus which pleasing emotions occasion in the stomach (as in the muscles and organs of secretion generally), we shall have no difficulty in perceiving why digestion goes on so well in parties where there is much jocularity and mirth. 'Laughter,' says Professor Hufeland of Berlin, 'is one of the greatest helps to digestion with which I am acquainted; and the custom prevalent among our forefathers, of exciting it at table by jesters and buffoons, was founded on true medical principles. In a word, endeavor to have cheerful and merry companions at your meals: what nourishment one receives amidst mirth and jollity, will certainly produce good and light blood.'"

CHAPTER IV.

Kinds of food—Climate modifies rules—Comparative digestibility of aliments—Bulk, a necessary ingredient—Coarse wheaten bread—The amount of food necessary to health—Appetite may exceed the power of digestion—Number of meals—The amount of daily solids need not exceed twenty-four ounces—Exercise before breakfast—Proper time for breakfast and dinner—Lunch—Wine superfluous—Variation of food—Unhealthiness of late suppers—Beverages—Ardent Spirits injurious—Fluids as difficult of digestion as solids—Dr. Warren on the use of Tobacco.

CLIMATE has a remarkable effect in modifying the rule as to a mixture of animal and vegetable food. The former has most of a stimulating quality, and this quality is greater in beef, and flesh in general, than in fowl or fish. Now, the inhabitants of torrid countries are in their ordinary condition least in need of stimulus: hence they find a simple diet of rice and sago sufficient for them. Those, on the contrary, who dwell in cold countries, need much stimulus: hence they can devour vast quantities of flesh and blubber, with scarcely any mixture of vegetable food.

Inquiries with respect to the comparative digestibility of different kinds of food, are perhaps chiefly of consequence to those in whom health has already been lost. To the sound and

healthy, it is comparatively of little consequence what kind of food is taken, provided that some variation is observed, and no excess committed as to quantity. Within the range of fish, flesh, and fowl, there is ample scope for a safe choice. There is scarcely any of the familiar aliments of these kinds, but, if plainly dressed, will digest in from two to four hours, and prove perfectly healthy. One rule alone has been pretty well ascertained, with respect to animal foods, that they are the more digestible the more minute and tender the fibre may be. They contain more nutriment in a given bulk than vegetable matters, and hence their less need for length of intestine to digest them. Yet it is worthy of notice, that between the chyle produced from animal and that from vegetable food, no essential distinction can be observed.

Tendon, suet, and oily matters in general, are considerably less digestible than the ordinary fibre; and these are aliments which should be taken sparingly. Pickling, from its effects in hardening the fibre, diminishes the digestibility of meat. Dressed shell-fish, cheese, and some other animal foods, are avoided by many as not sufficiently digestible.

Farinaceous foods of all kinds—wheat, oaten,

and barley bread, oaten porridge, sago, arrow-root, tapioca, and potatoes—are highly suitable to the human constitution. They generally require under two hours for digestion, or about half the time of a full mixed meal. Green vegetables and fruit, however softened by dressing, are less digestible, and less healthy as a diet.

One important consideration here occurs. There is need for a certain bulk in our ordinary food. Receiving nutriment in a condensed form and in a small space, will not serve the purpose. This is because the organs of digestion are calculated for receiving our food nearly in the condition in which nature presents it, namely, in a considerable bulk with regard to its nutritious properties. The same law applies with respect to the lower animals. When a horse is fed upon corn alone, it does not thrive. Nature did not contemplate that all horses should readily obtain a corn diet, but looked chiefly to grass and hay for their support. She therefore prepared the organs for the reception of something of considerable volume; and when a food of less volume is persisted in, her law is violated, and fatal consequences ensue. Civilised man is apt to pay little attention to this rule in his own case. Cor

sulting taste alone, he is apt to refine his food over-much, and reject what it were better for him to take.

The present writer is much inclined to doubt the propriety of grinding off the coarse exterior of wheaten grain. It does not seem by any means likely that nature calculated the human alimentary cavity for the use of the white interior of the grain, exclusive of all the rest. Wheat forms so large a part of our daily food, that, if this be the case, we unquestionably make a departure of a very important kind from the laws of health. Experience is favorable to this view, for the effect of coarse bread, or as it is often called in this country, Graham bread, in relaxing, seems only comparable to that of white bread in constipating the bowels.

With respect to the amount of food necessary for health, it is difficult to lay down any rule, as different quantities are safe with different individuals, according to their sex, age, activity of life, and some other conditions. There is a general and probably well-founded opinion, that most persons who have the means eat too much, and thereby injure their health. This may be true, and yet it may not be easy to assign a limit beyond which they ought not to go.

The best authorities are obliged to refer the matter to our own sensations. Dr. Beaumont, for example, says that we should not eat till the mind has a sense of *satiety, for appetite may exceed the power of digestion, and generally does so, particularly in invalids;* but to a point previous to that, which "may be known by the pleasurable sensations of *perfect satisfaction, ease, and quiescence of body and mind.*"

The number and times of meals are other questions as yet undetermined. As the digestion of a meal rarely requires more than four hours, and the waking part of a day is about sixteen, it seems unavoidable that at least three meals be taken, though it may be proper that one, if not two of these, be comparatively of a light nature. Breakfast, dinner, and tea as a light meal, may be considered as a safe, if not a very accurate, prescription for the daily food of a healthy person. Certainly four good meals a-day is too much.

No experiments, as far as we are aware, have been made with regard to the total amount of solids which a healthy person in active life may safely take in a day. It has been found, however, that confined criminals and paupers are healthiest when the daily solids are not much

either above or below twenty-four ounces. Of course, in active life there must be need for a larger allowance, but only to a small extent. We may thus arrive at a tolerably clear conviction of the reality of that excess which is said to be generally indulged in; for certainly most grown people who have the means, not excepting many who pursue very sedentary lives, eat *much more* than twenty-four ounces.

The interval between rising and breakfast ought not to be great, and no severe exercise or task-work of any kind should be undergone during this interval. There is a general prepossession to the contrary. But this, perhaps, only arises from a sense of relief from that oppression of food under which much of the rest of the day is spent. It is quite inconsistent with all we know of the physiology of aliment, to suppose that the body is capable of much exertion when the stomach has been for several hours quite empty.

We have known many persons take long walks before breakfast, under an impression that they were doing something extremely favorable to health. Others we have known go through three hours of mental task-work at the same period, believing that they were gaining

so much time. But the only observable result was to subtract from the powers of exertion in the middle and later part of the day. In so far as the practice was contrary to nature, it would likewise of course produce permanent injury. Only a short saunter in the open air, or a very brief application to business or task-work, can be safely indulged in before breakfast.

With regard to the time for either breakfast or dinner, nothing can be said with scientific authority. Dr. Combe, who is by no means disposed to take lax or indulgent views with regard to dietary matters, while favorable to an early dinner hour, allows that he has himself changed his hours for both breakfast and dinner, from comparatively early to comparatively late periods, without any perceptible inconvenience. In rural life, it is found convenient to dine not long after the middle of the day; but in cities, where it is necessary to have a long uninterrupted space in the middle of the day for business, a late dinner-hour is scarcely avoidable. In such a case, a slight lunch serves to keep the strength from sinking; and, if dinner is taken not less than five or six hours before bed-time, it is not easy to see how any injurious consequences should follow.

The period most friendly to health, at which to take the principal meal of the day, is undoubtedly between one and two o'clock. The changes that have taken place in meal hours from old times are more apparent than real. The present substantial lunch of fashionable life occurs nearly at the same hour as the Elizabethan dinner, and the present dinner is in all respects except name the same as the supper of those times. The only thing which the physiologist would much insist on is, that, between the two principal meals of the day there should be no long fasts. If the interval be above seven hours, a biscuit should be taken after four of the seven hours have elapsed. When the interval amounts to nine hours, the lunch should be a little more substantial, but not of animal food, particularly if any has been taken at breakfast. A glass of wine is often added to a biscuit lunch, or wine alone is taken; but neither of these practices can be commended. While a small quantity of bread or biscuit gives real strength, and is quite sufficient for the occasion, wine only gives a stimulus, serving for the time, but making the case worse afterwards.

A variety of ill-assorted aliments immediately impede digestion, and occasion a commotion

in the stomach unfavorable to health. But there would be a benefit from both a daily variation of food and eating of more than one dish at a meal, *if moderation were in both cases to be strictly observed;* for the relish to be thus obtained is useful as promotive of the flow of nervous energy to the stomach, exactly in the same manner as cheerfulness is useful. The policy which would make food in any way unpleasant to the taste, is a most mistaken one; for to eat with languor, or against inclination, or with any degree of disgust, is to lose much of the benefit of eating. On the other hand, to cook dishes highly, and provoke appetite by artificial means, are equally reprehensible. Propriety lies in the mean between the two extremes.

As the powers of the stomach are always actively employed in the digestion of its contents, full or hearty suppers are as unfavorable to quiet and salutary rest, as they are to health, safety, and the prolongation of life. The stomach, like every other machine, cannot always be employed and on the trot; it requires rest, and some space of time to recruit itsexhausted strength after the labors of the day; the best time suited for that rest is unquestionably when the body rests.

The body containing a vast amount of fluids, which are undergoing a perpetual waste, there is a necessity for an occasional supply of liquor of some kind, as well as of solid food.

"The primary effect of all distilled and fermented liquors," says Dr. Combe, "is to *stimulate the nervous system and quicken the circulation.*" They may thus be said to have a larger measure of the effect which animal food has upon the system. It is therefore the less surprising that those tropical nations which live most on farinaceous diet, are also found to be those who have the least propensity to the drinking of ardent spirits; while those northern nations which live most on animal food, have the exactly contrary inclination with respect to liquor, the Scandinavian tribes being notoriously the greatest sots that have ever been known. Dr. Combe admits that, in some conditions of the system, when the natural stimulus is defective, it may be proper to take an artificial supply in the form of ardent and fermented liquors.

"There are," he says, "many constitutions so inherently defective in energy, as to derive benefit from a moderate daily allowance of wine; and there are many situations in which even

the healthiest derive additional security from its occasional use. If, for example, a healthy person is exposed to unusual and continued exertion in the open air, or to the influence of anxious and depressive watchfulness, a moderate quantity of wine with his food may become the means of warding off actual disease, and enabling him to bear up uninjured, where without it he would have given way."

But Dr. Combe at the same time declares, in the most decided language, that, when the digestion is good and the system in full vigor, the bodily energy is easily sustained by nutritious food, and any "artificial stimulant *only increases the wasting of the natural strength.*"

Nearly all physicians, indeed, concur in representing ardent liquors as unfavorable to the health of the healthy, and as being, in their excess, highly injurious. Even the specious defence which has been set up for their use, on the ground that they would not have been given to man if they had not been designed for general use, has been shown to be ill-founded, seeing that *vinous fermentation*, from which they are derived, is not a healthy condition of vegetable matter, but a stage in its progress to decay. Upon the whole, there can be little doubt

that these liquors are deleterious in our ordinary healthy condition; and that simple water would be the most natural and the best of all, if we could only consent to deny ourselves further indulgence.

By persons unacquainted with the properties and effects of liquids, and the organization of the human frame, it is supposed that it is of little consequence what quantities of factitious fluids they take, believing that they are easily digested, or that they do not even require digestion. But this is a mistake; for wine and all alcoholic or malt liquors are as hard to digest, and require nearly as much labor of the concoctive powers, as solid food does.

Too large a quantity of fluid dilutes the gastric juice, and consequently weakens the activity of its digestive or solvent powers; on the other hand, too small a proportion does not sufficiently dilute the food, so as to preserve the body in a state of fluidity.

It may not be inappropriate here to introduce the opinion of Dr. J. C. Warren, of Boston, in regard to a practice remarkably prevalent in this country. We allude to the use of tobacco. "When there is any tendency," he says, "to phthisis and tuberculous developments

in the lungs, the debility of this organ, consequent on the use of tobacco in the way of smoking, must favor the deposit of tuberculous matter, and thus sow the seeds of consumption. This practice impairs the natural taste and relish for food—lessens the appetite, and weakens the powers of the stomach. As to the pleasure, it is, I believe, a well known fact, that a person smoking in the dark is often unable to detect whether his cigar is lighted."

"For more than twenty years," adds the same high authority, "I have been in the habit of inquiring of patients, who came to me with cancers of the tongue and lips, whether they used tobacco, and if so whether by chewing or smoking. If they have sometimes answered in the negative as to the first, such cases of exemption are exceptions to a general rule. When, as is usually the case, one side of the tongue is affected with ulcerated cancer, the tobacco has been habitually retained in contact with this part. The irritation of a cigar or even a tobacco pipe *frequently precedes cancer of the lip.*"

CHAPTER V.

Cleanliness—Insensible perspiration—Checks—Causes of a catarrh or cold—Importance of ablution—Frequent change of clothing—Duty of municipal rulers—Exercise—The muscles—All must be harmoniously developed—Exercise to be proportioned to the degree of health and vigor—Walking—Anecdote of Dr. Johnson—Running—Fencing highly recommended—Dancing—Riding—Aphorism of Boerhaave.

To keep the body in a cleanly condition is the third important requisition for health. This becomes necessary in consequence of a very important process which is constantly going on near and upon the surface of the body.

The process in question is that of *perspiration*. The matter here concerned is a watery secretion produced by glands near the surface of the body, and sent up through the skin by channels imperceptibly minute and wonderfully numerous. From one to two pounds of this secretion is believed to exude through these channels or *pores* in the course of twenty-four hours, being in fact the chief form taken by what is called the waste of the system, the remainder passing off by the bowels, kidneys, and lungs. To promote the free egress of this flu-

id is of great consequence to health; for when it is suppressed, disease is apt to fall upon some of the other organs concerned in the discharge of waste.

One of the most notable checks which perspiration experiences is that produced by a current of cold air upon the skin, in which case the pores instantly contract and close, and the individual is seized with some ailment either in one or the other organs of waste, whichever is in him the weakest, or in the internal lining of some part of the body, all of which is sympathetic with the condition of the skin. A result of the nature of that last described is usually recognised as a cold or catarrh. We are not at present called on particularly to notice such effects of checked perspiration, but others of a less immediately hurtful or dangerous nature.

The fluid alluded to is composed, besides water, of certain salts and animal matters, which, being solid, do not pass away in vapor, as does the watery part of the compound, but rest on the surface where they have been discharged. There, if not removed by some artificial means, they form a layer of hard stuff, and unavoidably impede the egress of the current perspiration. By cleanliness is merely meant the taking pro-

per means to prevent this or any other matter accumulating on the surface, to the production of certain hurtful consequences.

Ablution or washing is the best means of attaining this end; and accordingly it is well for us to wash or bathe the body very frequently. Many leave by far the greater part of their bodies unwashed, except, perhaps, on rare occasions, thinking it enough if the parts exposed to common view be in decent trim. If the object of cleaning were solely to preserve fair appearances, this might be sufficient; but the great end, it must be clearly seen, is to keep the skin in a fit state for the peculiar and very important functions which it is intended to perform.

Frequent change of the clothing next to the skin is of course a great aid to cleanliness, and may partly be esteemed as a substitute for bathing, seeing that the clothes absorb much of the impurities, and when changed, may be said to carry these off. But still this will not serve the end nearly so well as frequent ablution of the whole person. Any one will be convinced of this, who goes into a bath, and uses the flesh-brush in cleansing his body. The quantity of scurf and impurity which he will then remove,

from even a body which has changes of linen once a-day, will surprise him.

"What purity of heart is to the mind," says Epictetus, "such is CLEANLINESS to the body."

Cleanliness may indeed be ranked among the cardinal virtues, or, at least among the half virtues, as Aristotle terms them; for it not only conduces, in conjunction with them, to the welfare and comfort of the body, and removes the impure and corrupt secretions that accumulate on the surface of the skin, but it imparts a certain degree of delicacy and purity to the mind;--

> "Ev'n from the body's purity the mind,
> Receives a secret sympathetic aid:"

and in this sense the maxim of St. Ambrose, that "cleanliness is next to godliness," may be considered as founded in the strictest truth and philosophy.

Our advice to every person in tolerable health, is to wash the whole person every morning on rising, in cold water, summer and winter. You will soon derive such benefit from the practice, that you will not willingly omit it for a single day. Baths should not be taken immediately after eating.

Considering the importance of personal cleanliness for health, it becomes a great duty of mu-

nicipal rulers to afford every encouragement in their power to the establishment of public baths for the middle and working classes, and to extend and protect all existing facilities for washing clothes, as well as for private supplies of water.

The constitution of external nature shows that man was destined for an active existence, as, without labor, scarcely any of the gifts of Providence are to be made available. In perfect harmony with this character of the material world, he has been furnished with a muscular and mental system, constructed on the principle of being fitted for exertion, and requiring exertion for a healthy existence. Formed as he is, it is not possible for him to abstain from exertion without very hurtful consequences.

With regard to merely bodily exercise, it is to be observed, in the first place, that we have no fewer than four hundred muscles, each designed to serve some particular end in locomotion, or in operating upon external objects. A sound state of body depends very much upon every one of these muscles being brought into action in proper circumstances to a suitable extent. There is even a law operating within a certain range, by which each muscle will gain *in strength*

and soundness by being brought into a proper degree of activity.

The process of renovation may be said to be always going on in the body, but it does not go on with permanent steadiness unless the muscular system be exercised. Whenever one of the organs is put into exertion, this process becomes active, and the two operations of which it consists, maintain a due proportion to each other. A greater flow of blood and of nervous energy is sent to the organ, and this continues as long as it is kept in activity. When one state of action follows close upon another, the renovating part of the process rather exceeds the waste, and an accretion of new substance, as well as an addition of fresh power, takes place. On the contrary, when an organ is little exercised, the process of renovation goes on languidly, and to a less extent than that of waste, and the parts consequently become flabby, shrunken, and weak. Even the bones are subject to the same laws.

That motion is the tenure and condition of the safety and preservation of the whole of animate and inanimate nature, every portion of organized matter affords incontestible proofs. The solar system affords us a useful lesson of the ad-

vantages of activity; the earth and all the planets keep their constant motions—the air is tossed by the winds—the waters are ebbing and flowing; and all this change and motion is, no doubt, for the safety and preservation of the system. By a similar law of physics, the animal machine, to be preserved in a healthy tone, must be employed and kept in a state of activity.

And this primary and indispensable condition extends not only to the machine itself, but also to all its various component parts; no axiom in physiology being more clearly and better established, than that the exercise of the functions of an organ is neccessary to the health and well-being of that organ, and that, in proportion to the local injury sustained by the decay of the particular organ, the constitution suffers more or less. Thus if a limb is not used, the muscles shrink, and the bone becomes soft, and, by an analogous law of Nature, if the functions of the brain are suffered to remain in a state of inactivity, sottishness is the consequence; and in either case, the organ ceasing to perform its functions, an unpropitious influence is necessarily produced on the general health and vitality of the frame.

But though "motion is the tenure and condition of life," exercise should not be used immediately after repletion: inattention to this rule has proved fatal to many persons.

Remember, also, that the exercise of any particular limb does little besides improving the strength of that limb; and that, in order to increase our general strength, the whole frame must be brought into exercise. The blacksmith, by wielding his hammer, increases the muscular volume and strength of his right arm only, or, if the rest of his body derives any advantage from his exercise, it is through the general movement which the wielding of a hammer occasions. One whose profession consists in dancing or leaping, for the same reason, chiefly improves the muscles of his legs. The right hands of most persons, by being more frequently employed than the left, become sensibly larger as well as stronger.

A still more striking illustration of the principle is to be found in a personal peculiarity which has been remarked in the inhabitants of Paris. Owing to the uneven nature of the pavement of that city, the people are obliged to walk in a tripping manner on the front of their feet; a movement which calls the muscles of the calves

of the legs into strong exertion. It is accordingly remarked, that a larger proportion of the people of Paris are distinguished by an uncommon bulk in this part of their persons, than in other cities.

In order, then, to maintain in a sound state, the energies which nature has given us, and, still more particularly, to increase their amount, *we must exercise them.* If we desire to have a strong limb, we must exercise that limb; if we desire that the whole of our frame should be sound and strong, we must exercise the whole of our frame. It is mainly by these means that health and strength are to be preserved and improved. There are rules, however, for the application of these laws of our being.

1. In order that exercise may be truly advantageous, the parts must be in a state of sufficient health to endure the exertion. A system weakened by disease or long inaction must be exercised very sparingly, and brought on to greater efforts very gradually; otherwise the usual effects of over-exercise will follow. In no case must exercise be carried beyond what the parts are capable of bearing with ease; otherwise a loss of energy, instead of a gain, will be the consequence.

2. Exercise, to be efficacious even in a healthy subject, must be excited, sustained, and directed by that nervous stimulus which gives the muscles the principal part of their strength, and contributes so much to the nutrition of parts in a state of activity. In order to obtain the advantage of this powerful agent, *we must be interested in what we are doing*. A sport that calls up the mental energy, a walk towards a place which we are anxious to reach, or even an exercise which we engage in through a desire of invigorating our health and strength, will prove exceedingly beneficial, when more of actual motion, performed languidly, may be nearly ineffectual.

3. The waste occasioned by exercise must be duly replaced by food; as, if there be any deficiency in that important requisite, the blood will soon cease to give that invigoration to the parts upon which increased health and strength depend.

Exercise is usually considered as of two kinds —active and passive. The active consists in walking, running, leaping, riding, fencing, rowing, skating, swimming, dancing, and various exercises, such as those with the poles, ropes, &c., prescribed in gymnastic institutions. The

passive consists in carriage-riding, sailing, friction, swinging, &c.

Walking is perhaps the readiest mode of taking exercise, and the one most extensively resorted to. If it brought the upper part of the body as thoroughly into exertion as the lower, it would be perfect, for it is gentle and safe with nearly all, except the much debilitated. To render it the more effectual in the upper part of the body, it were well to walk at all times, when convenient, *singly*, and allow the arms and trunk free play. It is best to walk with a companion, or for some definite object, as the flow of nervous energy will be by these means promoted, and the exercise be rendered, as has already been explained, the more serviceable.

Very long or rapid walks should not be attempted by individuals of sedentary habits, nor by weakly persons. Their frames are totally unprepared for such violent exertion. Every summer, many youths from ignorance do themselves much injury by undertaking pedestrian excursions much beyond their strength. Serious consequences—consumption not unfrequently—follow such ill-advised efforts.

With respect to very rapid walking, Dr. John-

son records some effects from it, of a remarkable nature, as occurring in his own case. "In my own person," says he, "I had some years ago, a very severe and alarming instance of the bad effects of too great muscular action, occasioned by a habit of walking very fast. After a day and night of unusual fatigue and rapid pedestrian exercise, together with considerable mental anxiety, I was suddenly seized with an intermission of the pulse at irregular periods. During each intermission, I felt the heart give a kind of struggle as it were, and strike with great violence against the ribs, accompanied by a peculiar and most distressing sensation in the cardiac region, which I cannot describe."

These symptoms became aggravated, and lasted eight weeks, "during which time," he continues, "I used horse-exercise, and kept, when at home, in a horizontal position. At length the heart lost its morbid irritability; and at the end of fourteen or fifteen weeks, I could walk as well as ever.

Running is an exercise which is intermediate between walking and leaping; it consists, in fact, of a series of leaps performed in progression from one foot to another, and the degree of its rapidity bears a constant proportion to the length

of the individual and successive leaps. Although this and other gymnastic exercises, such as wrestling, throwing heavy weights, &c., may, when judiciously had recourse to, invigorate the body, yet, from apprehension of the evils and accidents which may be so occasioned, young persons ought not to be permitted to engage extensively in such exercises, except under the care of some one well acquainted with gymnastics.

Fencing is, of all active exercises, that which is the most commendable, inasmuch as it throws open the chest, and at the same time calls into action the muscles both of the upper and lower extremities. Add to this, that it improves very much the carriage of the body; for which reason it may be reckoned a branch of polite education. The salutary effects of the other exercises which are taught in gymnastic institutions, such as exercise with the ropes, pulleys, &c., in increasing the strength of the body, cannot be denied.

Dancing is exhilarating and healthful, and seems to be almost the only active exercise which the despotic laws of fashion permit young ladies to enjoy. We can scarcely consider modern quadrilles, elegant though they be, as exercise, seeing that they differ little from the most

common walking movement. But country-dances, reels, and hornpipes, are genuine exercises, and their less refinement may be considered as amply compensated by the superior benefit which they confer upon health.

Riding is generally classed among the passive exercises, but in reality it is one which involves much action of the whole frame, and as such is very useful for health. Pursued solitarily, it has the drawback of being somewhat dull; but, when two or three ride in a company, a sufficient flow of the nervous energy may be obtained.

The amount of bodily exercise which should be taken must vary according to the habits, strength, and general health of the individual. It was an aphorism of Boerhaave, *that every person should take at least two hours' exercise in the day*, and this may be regarded as a good general rule.

CHAPTER VI.

Mental Exercise—The corresponding law—Fatal Effects of a disease of the Mental Faculties—Excessive exercise of the brain—Life in large cities—The victims of paralysis—Literary enthusiasts—Leyden—Nicol—Murray—Davy—Sir Walter Scott—Mournful exclamation of Weber—Precocious geniuses—Truths that should be impressed on all.

HAVING thus explained the laws and regulations by which exercise may be serviceable to the physical system, we shall proceed to show that the same rules hold good respecting the mental faculties. These, as is generally allowed, however immaterial in one sense, are connected organically with the brain—a portion of the animal system nourished by the same blood, and regulated by the same vital laws, as the muscles, bones, and nerves.

As, by disuse, muscle becomes emaciated, bone softens, blood-vessels are obliterated, and nerves lose their natural structure, so, by disuse, does the brain fall out of its proper state, and create misery to its possessor; and as, by over-exertion, the waste of the animal system exceeds the supply, and debility and unsoundness are produced, so, by over-exertion, are the func-

tions of the brain liable to be deranged and destroyed. The processes are physiologically the same, and the effects bear an exact relation to each other.

As with the bodily powers, the mental are to be increased in magnitude and energy by a degree of exercise measured with a just regard to their ordinary health and native or habitual energies. Corresponding, moreover, to the influence which the mind has in giving the nervous stimulus so useful in bodily exercise, is the dependence of the mind upon the body for supplies of healthy nutriment. And, in like manner with the bodily functions, each mental faculty is to be strengthened by the exercise of itself in particular. Every part of our intellectual and moral nature, stands, in this respect, exactly in the situation of the blacksmith's right arm, and the lower limbs of the inhabitants of Paris : *each must be exercised for its own sake.*

The fatal effects of the disuse of the mental faculties are strikingly observable in persons who have the misfortune to be solitarily confined, many of whom become insane, or at least weak in their intellects. It is also observable in the deaf and blind, among whom, from the non-employment of a number of the faculties,

weakness of mind and idiocy are more prevalent than among other people. This is indeed a frequent predisposing cause of every form of nervous disease.

The loss of power and health of mind from imperfect or partial exercise of the faculties, is frequently observable in the country clergy, in retired merchants, in annuitants, in the clerks of public offices, and in tradesmen, whose professions comprehend a very limited range of objects. There is no class, however, in whom the evil is more widely observable than in those females, who, either from ignorance of the laws of exercise, or from inveterate habit, spend their lives in unbroken seclusion, and in the performance of a limited range of duties. All motive is there wanting. No immediate object of solicitude ever presents itself. Fixing their thoughts entirely on themselves, and constantly brooding over a few narrow and trivial ideas, they at length approach a state little removed from insanity, or are only saved from that, perhaps, by the false and deluding relief afforded by stimulating liquors.

In general, the education of such persons has given them only a few *accomplishments*, calculated to afford employment to one or two of the

minor powers of the mind, while all that could have engaged the reflecting powers has been omitted. Education, if properly conducted, would go far to prevent the evils which befall this unfortunate part of the community.

On the other hand, excessive exercise of the brain, by propelling too much blood to it, and unduly distending the vessels, is equally injurious with its disuse. And not only are fatal effects to be apprehended from undue mental task-work, but also from that constant *stretch* of the mind which attends an unduly anxious and watchful disposition.

It is in large cities that this unintentional kind of self-destruction is most conspicuously exemplified. To spend nine hours at a time in business, without food or relaxation, is not only not uncommon, but an almost universal practice, among many: from a breakfast at eight, to a chop at five, they are never, to use an expressive phrase, *off the stretch*. Upon a stomach enfeebled by exhaustion, they then lay the load of a full meal, which perfect leisure would hardly enable them to digest. But, far from waiting to digest it, they have no sooner laid down knife and fork, than away they must once more rush to business—not perhaps willingly, for nature

tells them that it would be decidedly agreeable to rest; but then—but then *business must be attended to.*

If nature were to punish the daily transgression by the nightly suffering, we should find few who, for the sake of pecuniary gain, would thus expose themselves to misery. *But unfortunately she runs long accounts with her children, and, like a cheating attorney, seldom renders her bill till the whole subject of litigation has been eaten up.* Paralysis at fifty comes like the mesne process upon the victim of commercial enthusiasm,* and either hurries him off to that prison from which there is no liberation, or leaves him for a few years organically alive to *enjoy* the fruits of his labours.

A life thus spent is a mere fragment of what it ought to be. The means of obtaining pleasure have swallowed up the end. The glorious face of nature, with all its sublime and beautiful alternations; the delights of social life; the pleasures arising from the exercise of the finer feelings and the cultivation of the intellect; all that higher class of gratifications which nature

* Of the frequent occurrence of premature paralysis, in consequence of the mode of life above described, we are assured by a metopolitan physician of the greatest eminence.

designed a moderate labour to place within the reach of *all* her creatures, have been lost to such a man.

The absurdity of an ignorance or weakness of this kind is perhaps still more striking, when it occurs in individuals who make the acquisition of knowledge the chief aim of life. Leyden, an enthusiast of this order, was ill of a fever and liver complaint at Mysore, and yet continued to study ten hours a-day. He eventually sank, in his thirty-sixth year, under the consequences of spending some time in an ill-ventilated library, which a slight acquaintance with one of the most familiar of the sciences would have warned him against entering.

Alexander Nicoll, a recent professor of Hebrew at Oxford, of whom it was said that he might have walked to the wall of China without the aid of an interpreter, died at the same age, partly through the effects of that intense study which so effectually, but so uselessly, had gained him distinction.

Dr. Alexander Murray, a similar prodigy, died in his thirty-eighth year, of over-severe study; making the third of a set of men remarkable for the same wonderful attainments, and natives of the same country, who, within a space

of twenty years, fell victims to their ignorance of the laws of mental exercise.

In 1807, Sir Humphrey Davy prosecuted his inquiry into the alkaline metals with such inordinate eagerness, that, through excitement and fatigue, he contracted a dangerous fever, which he, in ignorance of the human physiology, ascribed to contagion caught in experimenting on the fumigation of hospitals. His physician was at no loss to trace it to his habits of study, which were such as would have worn out a frame much more robust. Davy at this time spent all the earlier part of the day in his laboratory, surrounded by persons of every rank, whose admiration of his experiments added to his excitement. Over-tasked nature at length yielded under his exertions, and it was with the greatest difficulty that he was restored to health.

Excessive application is known to have in like manner thrown Boerhaave into a species of delirium for six weeks, and to have on one occasion given a severe shock to the health of Newton. It unquestionably cut short the days of Sir Walter Scott, and also of the celebrated Weber, whose mournful exclamation in the midst of his numerous engagements, can never be forgotten:—"Would that I were a tailor, for then I should have a Sunday's holiday!"

The premature extinction of early prodigies of genius is clearly traceable to the same cause. We read that, while other children played, they remained at home to study; and then we learn that they perished in the bud, and baulked the hopes of all their admiring friends. The ignorant wonder is of course always the greater, when life is broken short in the midst of honorable undertakings. We wonder at the inscrutable decrees which permit the idle and the dissolute to live, and remove the ardent benefactor of his kind, the hope of parents, the virtuous and the self-devoted; never reflecting that the highest moral and intellectual qualities avail nothing in repairing or warding off a decided injury to the physical system, which is regulated by different laws.

The conduct of the Portuguese sailors in a storm, when, instead of working the vessel properly, they employ themselves in paying vows to their saints, is just as rational as most of the notions which prevail on this subject in the most enlightened circles of society.

It ought to be universally known, that the uses of our intellectual nature are not to be properly realized without a just regard to the laws of that perishable frame with which it is con-

nec d, we must neither overtask nor undertask the body, neither push it with too great speed, nor leave it neglected; and that, notwithstanding this intimate connexion and mutual dependence, the highest merits on the part of the mind will not compensate for muscles mistreated, or soothe a nervous system which severe study has tortured into insanity.

To come to detail, it ought to be impressed on all, that to spend more than a moderate number of hours in mental exercise diminishes insensibly the powers of future application, and tends to abbreviate life; that no mental exercise should be attempted immediately after meals, as the processes of thought and of digestion cannot be safely prosecuted together; and that, without a due share of exercise to the whole of the mental faculties, there can be no soundness in any, while the whole corporeal system will give way beneath a severe pressure upon any one in particular.

These are truths completely established with physiologists, and upon which it is undeniable that a very great portion of human happiness depends.

CHAPTER VII.

Necessity of repose--Conditions of healthy sleep--Late suppers--Nightmare--Dreams, a test of health--Kinds of bed--Mistaken notion--The example of animals--Rules for sleeping--Time proper to pass in sleep--Dr. Warren's recommendation--Rules to be observed on rising in the morning.

Exercise demands occasional periods of repose, and, in particular, that a certain part of every twenty-four hours be spent in sleep.

It may be laid down as an axiom, that the more uninterrupted sleep is, the more refreshing and salutary will be its effects; for, during this period, the body undoubtedly acquires an accession of nervous energy, which restlessness, however induced, must disturb; and therefore the state of the body, before going to sleep, the kind of bed, and the manner of clothing, require especial attention.

As the functions of the body are performed more slowly during our sleeping than our waking hours, a full meal or supper, taken immediately before going to bed, imposes a load on the stomach, which it is not in a condition to digest, and the unpleasant consequence of op-

pressive and harassing dreams is almost certain to ensue.

When the sleeper lies upon his back, the heart pressing, while pulsating, on the lungs, gives rise to a sense of intolerable oppression on the chest, which seems to bear down upon the whole body, so that in this painful state, not a muscle will obey the impulse of the will, and every effort to move appears to be altogether unavailing. This constitutes *incubus* or *nightmare;* and it may be observed, that, as acidity on the stomach, or indigestion, gives rise to such dreams, so all dreams of this disturbed character are converse indications of indigestion; for which reason, the great physiologist, Haller, considered dreaming to be a symptom of disease. *It is certain that the dreams of healthy persons are the lightest and most evanescent.*

The kind of bed on which we repose, requires attention. Some are advocates for soft, others for hard beds; hence we find that some accustom themselves to feather beds, others to mattresses. The only difference between a soft and a hard bed is this—that the weight of the body in a soft bed presses on a larger surface, than on a hard bed, and thereby a greater degree of comfort is enjoyed.

Parents err in fancying that a hard bed contributes to harden the constitution of their children; for which reason they lay them down on mattresses, or beds with boarded bottoms. A bed for young children cannot be too soft, provided the child does not sink into it in such a manner that the surrounding parts of the bed bend over and cover the body. The too great hardness of beds, says Dr. Darwin, frequently proves injurious to the shape of infants, by causing them to rest on too few parts at a time; it also causes their sleep to be uneasy and unrefreshing.

The universal analogy derived from other animals, evinces the truth of this doctrine, both in respect to the softness and due degree of warmth of their beds. Birds line the nests of their young with feathers; the eider duck and the rabbit pluck the down from their own breasts to increase the softness of the beds of their tender offspring, and brood over them with their wings, or clasp them to their bosoms, for the sake of warmth. When in bed, the head should always be a little higher than the feet, and those subject to a palpitation of the heart, should lie with their heads very high.

Night clothes should never consist of more

than a chemise or shirt of cotton or linen, of a thickness suited to the season. It is also improper to sleep in a bed overloaded with clothes; the body is thereby heated, and feverishness and restlessness induced. Accordingly, persons who complain of sleeplessness should look to the quantity of their bed-clothing; for the unnecessary addition of a single blanket may be the sole cause of the annoyance. It is also imprudent to lie with the head entirely within the bed-clothes: for, in this case, the same air which has been already breathed, must be again and again inhaled. For the same reason, curtains, if used at all, should not be drawn closely round the bed. Washing the face and hands, and brushing the teeth before going to bed, will be found to contribute materially to comfort.

Whatever be the time chosen for sleep, it is evident that no person can, with impunity, convert day into night. Eight o'clock for children, and eleven for adults, are good hours for retiring to rest. It is well known, that children require more sleep than adults; and more sleep is requisite in winter than summer. The average duration of sleep which may be recommended for adults, is *eight* hours; but much depends upon habit, and many persons require only six.

Dr. Warren, the celebrated Boston physician, recommends, as a general rule, that, in the case of adults as well as children, but one should lie in the same bed. "The substance," he says "should be hair, thoroughly prepared so that it shall have no bad smell; in winter, it may be cotton, or of hair and cotton. The use of double beds has been very generally adopted in this country, perhaps in part as a matter of economy; but this practice is objectionable on a variety of accounts, among which, may be named the interference of one individual with the tranquillity of the other, and the inhalation of matters excreted by the breath and by the skin."

It is scarcely necessary to observe, that on rising in the morning, the strictest attention should be paid to washing the face, neck, hands. The mouth and teeth, and indeed the whole person should also be well cleansed, summer and winter. The most simple powder for the teeth, is finely brayed charcoal, a little of which will clear away all impurities, and act as a preservative. The neglect of brushing and cleansing the teeth is invariably attended with both disease and decay, which by timely and daily ablutions might have been avoided altogether. Those who have grown up in the omission of this sa-

lubrious habit, should lose no time in availing themselves of a practice so essential to general health and cleanliness. The teeth should be gently brushed, both night and morning. The brush should be neither extremely hard nor extremely soft, but should possess a medium quality.

The teeth are composed of particles of lime held in contact by animal glue. Over the bony or inorganic part of the tooth, there is a delicate layer of enamel, which is the hardest substance in the human body. It covers the upper part or crown of the teeth, and is very necessary for their protection, not only when eating, but from acids which would destroy them, were it not for this covering. It is also very hard; you can strike fire with it on a piece of steel, and when buried in the earth, it will remain unchanged for centuries. When this beautiful and necessary covering is removed, the teeth soon become sensitive, and decay. It is very essential that it should *never be injured.*

We have already spoken of the importance of a thorough mastication of food. To this, sound teeth are essential. That food should be well and speedily digested, it is absolutely necessary that it should first be reduced to minute

fragments; indeed, Fauchard declares, that, when so masticated, it is half digested. The gastric juice acts much more promptly upon food in small pieces than in lumps. The practide of swallowing the food half chewed, therefore, induces dyspepsia sooner or later, and, at the same time, impairs the powers of the stomach.

On leaving the bedroom after sleeping, the windows should be opened, and the clothes of the bed turned down, in order that the exhalations of the body during sleep may be dissipated. If, instead of this, the bed be made immediately after we have risen, these exhalations are again folded up with the clothes—a practice which is not consonant either with cleanliness or health.

CHAPTER VIII.

Proper temperature of the body—Consequences of checking the perspiration—Erroneous notion—Treatment of infants—Dr. Warren's advice..The use of cold water becoming more general—Good effects of the institution of Priesnitz—Cold feet—Advice to the sedentary—Means of heating school-rooms, &c.—Plan recommended by the writer—Clothing—The use of flannel—Wet clothes and wet feet—Warning to young people—Harden the constitution—Rheumatism—How to avoid and how to cure it.

The fifth important requisite for health is,—that the body be kept in a temperature suitable to it.

The degree of heat indicated by 60 degrees of Fahrenheit's thermometer, or that of a temperate summer day, is what the human body finds it agreeable to be exposed to when in a state of inactivity. In air much colder, the body experiences an unpleasant sensation, unless some warm clothing be worn, or a pretty active exercise be indulged in.

When, either by natural or artificial means, the body is kept in a suitable state of warmth, the functions of the circulation and perspiration in the skin go on healthily; it is red, in consequence of the blood being urged into the capil-

laries or minute vessels near the surface; it is also soft and moist, from the action of the glands for secreting the waste fluid and its free egress through the pores. This is a condition of great comfort, and the appearance of those who enjoy it, conveys to others the notion that they are in good health.

When, on the contrary, there is a much lower temperature, the functions of the vessels connected with the skin are apt to be considerably deranged. The vessels, in these circumstances, contract; the blood is driven inwards, where it it sometimes occasions diseases of a dangerous nature; the perspiration, also, being prevented from passing out by its usual channels, catarrhal complaints ensue, sometimes ending in consumption.

It is of more importance to make these facts generally known, as a notion prevails that exposure to a painful degree of cold tends to induce hardiness of constitution, and to promote health. Undoubtedly, there may be harm from an opposite extreme, and we know well, that excessive clothing and living in over-heated apartments are detrimental to health. But safety lies in a medium between the two extremes. There is a degree of warmth which is both

agreeable and healthy, and which it is desirable to have around us as constantly as possible.

There is no period of life at which warmth is of more consequence than in infancy. In a very young babe, the circulation is almost altogether confined to the surface, the internal organs being as yet in a very weak state. In such circumstances, to plunge the child into cold water, from an idea of making it hardy, as is customary in some countries, and among ignorant persons in our own, is the height of cruelty and folly; for the unavoidable consequence is, that the blood is thrown in upon the internal organs, and inflammation, bowel-complaint, croup, or convulsions, are very apt to ensue. A baby requires to be kept at a temperature above what is suitable to a grown person; it should be warmly, not heavily clothed; the room where it is kept should be maintained at a good, but not oppressive heat; and it should never be put into other than tepid water. It should not be exposed to the open air for some days after its birth.*

* A mother's own experience is probably the best guide on this subject, as the opinions of physicians conflict. For example, Dr. J. C. Warren, of Boston, whose authority will be prized as highly in the United States as that of any living physician, says: "Children, as soon after birth as practicable, should be washed, or rather dashed

At all periods of life, it is most desirable to avoid exposure to very low temperatures, especially for any considerable length of time. To sit long in cold school-rooms or work-rooms, with the whole body, and especially the feet, in a chilled condition, is very unfavourable to the health of young people. It is not possible that a condition so adverse to the healthy action of the cutaneous vessels, should not lead, if long persisted in, to very bad consequences.

Those who are compelled to be sedentary, should make it their endeavor to obtain a sufficiently high temperature, either by warming their apartments sufficiently, or thickening their clothing. Common fires, though delightful from their cheerful look, are confessedly very inadequate, in most circumstances, to heat large work-rooms, school-rooms, or even the larger class of sitting-rooms; not to speak of the great

with a sponge dipped in cold water, two or three times a day, and well rubbed after!"

Again he remarks on the use of cold water: "Of late years the apprehension of the external use of cold water has greatly diminished, and the practice, the result of civilization, has very much increased. The institution of Priesnitz, at Graefenburg, has done great service, showing to what extent the use of water may be carried without detriment."

Dr. Warren approves of the use of the shower-bath, except in cases where the system is too much enfeebled to be benefited by the shock.

objection which has been made to them on the score of economy, three-fourths of their heat being sent off through the chimney.

It is most desirable that some means in which the public could have confidence were devised, for thoroughly, and at the same time, healthily, warming large apartments. Stoves enclosed in large iron-plate cases (Arnott's stoves), pipes of hot water or of steam, and blasts of heated air, are amongst the most conspicuous plans tried within the last few years. But none of these plans seems to have succeeded in obtaining the hearty approbation of the public, chiefly, we suspect, from their not being accompanied by what is peculiarly necessary where they are in operation,—a means of ventilation.

We can speak, from some experience, in favor of the plan of large steam-tubes, accompanied by a ventilating process, and have very little doubt, that, with the latter requisite, this and several other of the recently suggested modes of heating might be found to serve the desired end. It is certainly of great consequence that some plan should be generally consented upon for warming the large rooms in which scholars and work people spend so much time, as the chilliness there so generally expe-

rienced is a fatal underminer of the human constitution.

Clothing should be in proportion to the temperature of the climate and also the season of the year; and where there are such abrupt transitions from heat to cold as in our country, it is not safe to go very thinly clad, as we may, in that case, be exposed to a sudden chill before we can effect a proper change of dress. Very fatal effects often result to ladies from incautiously stepping out of heated rooms in the imperfect clothing which they ludicrously style *full-dress:* all such injuries might be avoided by putting on a sufficiency of shawls, and allowing themselves a little time in the lobby to cool. The under-clothing in this country should be invariably of flannel,* which is remarkably well calculated to preserve uniformity of temperature, as well as to produce a healthy irritation in the skin.

While the value of comfortable clothing is fully acknowledged, we should never lose sight of the value of exercise for keeping up a kindly

* This is Dr. Combe's opinion, who recommends the wearing of flannel, summer and winter. Some physicians think, however, that raw silk, cotton, or even thick linen is preferable.

glow upon the surface, and for the support of a high tone of general health. Any one who, neglecting this, should live constantly in a warmed apartment, or only go out of doors muffled up in a load of clothes, would speedily suffer from a relaxed state of the system, and become so susceptible of damage from the slightest change of temperature in the atmosphere, that the most dangerous consequences might be apprehended.

Wet clothes applied to any part of the body when it is in an inactive state, have an instantaneous effect in reducing the temperature, this being an unavoidable effect of the process of evaporation which then takes place. Hence it is extremely dangerous to sit upon damp ground, or to remain at rest for a single minute with wetted feet, or any other part of the body invested in damp garments. Dampness in the house in which we live has the same effect, and is equally dangerous. The chill produced by the evaporation from the wetted surface, checks perspiration, and sends the blood inwards to the vital parts, where it tends to produce inflammatory disease.

Few persons seem to be aware of these truths. We find young men heedlessly getting their

feet wet, and sitting with them in that condition, thereby incurring the most deadly peril. Young women commit a similar folly, when they walk out in thin shoes on a wet or cold day. Exposure to wet, damp, or cold, is of comparatively little moment when the body, by a course of exercise or training, has been prepared to endure these conditions. Thus, a person brought up delicately, or much within doors, would be killed by that which would have little or no effect upon a ploughman. It is therefore worthy of being suggested as a line of policy, that no one should accustom him or herself to a pampered or too delicate mode of life. Every one should, if possible, go out daily, both in good and bad weather, and in this way strengthen and harden the constitution to endure all ordinary and reasonable exposure.

It is important, however, to note, that even the hardiest persons are never safe from wet clothes and other modes of exposure to a reduced temperature. No complaint is more common among out-of-door laborers, and also poor people in damp lodgings, than rheumatism. This is an affection produced solely by a violation of the natural law which demands that the body should not be chilled. Rheumatism is

produced alike from exposure to a shower, or to a draught of cold air when the body is warm, and from sitting with the feet on a cold stone or clay floor; the only difference, perhaps, being that the rheumatism is in one case in the shoulders, and in the other in the legs.

Let us therefore impress on all the propriety of avoiding chills, the effect of which may be much more fatal than a simple attack of rheumatism. When rheumatism has been contracted, the best remedy for its expulsion, if adopted in time, is friction of the part; if well rubbed before a fire with flour of mustard, so as to cause a counter irritation on the surface, the internal complaint may be expelled. The *judicious* use of cold water is also very efficacious in this complaint.

CHAPTER IX.

Errors in dress—The shape of the shoe—High heels—Leathern small clothes—Tight lacing—A hint to fine ladies—Form of the Venus de Medici—Ruinous results of the present fashion—An instance—Diseases which accrue—Domestic bereavements—The fault too often lost sight of—Culpability of parents—An inhuman mother—General rule.

This is perhaps the most appropriate place in which to introduce some remarks upon errors in dress. The integuments which nature calls upon us to put on for the sake of warmth, are too often the means of inflicting serious injury, either through ignorance or caprice. It is therefore necessary, in a treatise on the preservation of health, to advert in emphatic terms to this subject.

It is scarcely too much to say, that there is no part of the human frame, from the sole of the foot to the crown of the head, which has not been, and is not at this moment, mistreated by fashion.

We laugh at the Chinese ladies, who have their feet constrained by iron moulds into mere bulbous appendages to the limbs; but we never

reflect, that, amongst ourselves, errors only inferior in degree are committed. The foot naturally spreads out, fan-like, from the heel to the toes. But instead of having our shoes formed in the triangular shape, they are made in a lozenge form, truncated at the front, the toes being thus perverted from their radiating arrangement into one exactly the opposite; so that they become crushed under one another, and deprived of a great part of that muscular power by which they were designated to propel our bodies in walking.

In the greater height usually given to the heels of shoes, another important deviation from nature is committed. When the heel is raised above the level of the ball of the foot, a complete derangement takes place in the muscles of locomotion; the power of the limb is impaired; and the whole body is thrown off its equipoise. It is impossible in such circumstances to exercise the body as it ought to be. The foot is also forced or plugged down into the narrow front of the shoe, where the toes become liable to the grievance of corns. Thus the free healthy play of the various parts of the body is further diminished. From the uneasiness and constraint experienced in the feet, sympathetic

affections of a dangerous kind often assail the stomach and chest; as hemorrhage, apoplexy, and consumption. Low-heeled shoes, with a sufficiency of room for the toes, would completely prevent all such consequences.

An improved taste in the male sex has long since abolished the coarse and self-annoying absurdity of small-clothes; but it is too common to impede the circulation and the play of the muscles by tight apparel, especially in the regions of the stomach and neck. The immediate effect of these injudicious appliances is much inconvenience: the remote result, is a diminution of the general strength and health.

But all the errors of the male sex sink into insignificance, when compared with one to which the fair are liable. In the construction of the human chest, nature has provided ample room for several important viscera, the functions of which cannot be in any degree disturbed, without a wrong being inflicted upon the whole system. Here reside the heart, the lungs, the liver, and the stomach.

Fine ladies may affect to shut their mind's eye to the existence of such things; but the daintiest of their emotions depend upon the right state of those very viscera, without which,

they could no more think, speak, and act, than they could cast languishing looks without eyes, or melt our hearts by witching minstrelsy without fingers. In the natural state, the external figure at this place tapers gently downwards. The waist of the Venus de Medici is of that form, and its perfect elegance was never challenged. But the women of the ordinary world have set up for themselves a different standard of beauty. A fine waist, in their estimation, is one which tapers rapidly below the arms, and is not above two-thirds the natural girth. It must also be strictly round, although the waist of nature verges upon the oval.

In order to reduce themselves to the desired space and shape, almost all the unmarried, and not a few who are otherwise, brace themselves in a greater or less degree with corsets, which no doubt produce the requisite roundness and slenderness, but at the expense of all the internal organs upon which health depends. The false ribs are pressed inwards; the respiratory and circulatory systems are crushed and thrust out of their proper place; the alimentary system is deranged; and even upon the exterior of the person, deformities of the most glaring kind, such as humped shoulders and curved

spines are produced. Custom, to a certain extent, enables the victim to endure the inconvenience; there are even some who feel so little trouble from it, as to deny that any harm ensues from tight-lacing. But a violation so great cannot be otherwise than mischievous.

We have seen a young lady's sash which measured exactly twenty-two inches, showing that the chest to which it had been applied had been reduced to a diameter (allowing for clothes) of little more than seven inches. All who are aware of the internal organs at that part, know very well, that it is impossible for them to exist in their natural condition within so small a space. Bruised, impeded, and disordered, they must of course be, and accordingly cannot fail to become a source of dreadful suffering to the wretched being who outrages them. Palpitations, flushings, dyspepsia, determination of blood to the head, and consumption, are among the evils which physicians enumerate as flowing from this sacrifice to vanity. Another of a moral kind is acknowledged to be of by no means infrequent occurrence: in order to soothe the painful sensations produced by the constraint, spirituous liquors and cordials are resorted to, and thus habits of the most degrading nature are formed.

Another evil still, respecting which a hint may be sufficient, is the unfitting of the system for the duties of a mother. How many domestic afflictions, which are submitted to in a spirit of resignation, as the unavoidable decrees of Providence; how many of the saddest scenes which this world ever presents—gentle and tender girls pining away under the eyes of hopeless parents—beloved wives torn from the arms of husbands and children at the very moment when prolonged life was so needful—must be owing to a cause too trivial and unworthy to be mentioned in the same sentence with its so dire effects!

No doubt, it is well to submit meekly to such afflictions; but while they are ascribed in all humility to a Providence which is, upon the whole, only another term for Mercy and Justice, *let us not be blind to the fact that they accrue through violations committed by ourselves upon laws established by Providence for our happiness, and might have been avoided by a different course of conduct.*

The fashion of tight-lacing obviously owes its origin to a desire on the part of the ladies to attract admiration. It is of little importance to point out, that they are quite wrong in their

calculations as to the effect; but we would press upon the guilty parties, and all interested in their welfare, that tight-lacing is a practice which cannot be long persisted in without the most disastrous consequences. It is painful to reflect, that parents, so far from discouraging the practice, are so ignorant as often to force it upon their children.

We have heard of a young lady whose mother stood over her every morning with the engine of torture in her hand, and, notwithstanding many remonstrative tears, obliged her to submit to be laced so tightly as almost to stop the power of breathing. The result is, that the unfortunate victim is severely afflicted with asthma, and has fallen into a state of low health.

As a general rule, it cannot be impressed too strongly upon those who have the care of young persons, that all clothing should sit lightly upon the figure, so as to allow of the full play of every part of the system.

CHAPTER X.

Health promoted by innocent enjoyments—A harmonious exercise of the mental faculties essential—The continued use of one set of faculties—The daily duties of men——Illustration drawn from the pursuits of the tailor and the lawyer——A false notion in regard to fictitious reading—A philosophical inference—The liberal arts—Reading aloud—Music—Dancing—Theatrical entertainments—Abuses at our theatres—Diversions for the young—Pain and pleasure—The duty of cheerfulness—Suicides—Fatal consequences of depression of spirits—Conclusion.

A SUFFICIENCY of innocent enjoyments has been set down as the sixth requisite towards the preservation of health. It may seem almost superfluous to treat this part of the subject, since the disposition to take amusement is one by no means generally wanting. A regard, however, for the completeness of our little treatise, enforces us to make a few remarks on it; and we are not satisfied that there is not a considerable number of persons to whom an injunction to take innocent enjoyments is needful. There may be a general advantage in seeing the matter placed on something like a philosophical basis.

No physiological doctrine seems more entitled to faith and regard, than that a harmonious

exercise, in moderation, of all parts of the system, including the organs of the mental faculties, is necessary for health. It is proved by the very craving which we experience, after a long task, or after a long perseverance in some particular habits, for something which will engage a different set of faculties. There is nothing which will pleasingly engage our thoughts for any considerable length of time. Something inferior will invariably be preferred, if it only be new.

Now the duties by which men in general earn their subsistence, are in all cases, of such a nature, as only to call into exercise a part of their mental and bodily system. Something is required, at once to soothe and compensate us for the drudgery of our current labours, and to bring into exercise those parts of our muscular frame and intellect, which professional duty has left unoccupied.

To begin with an humble illustration: how delightful to a tailor, after long exercising his fingers and arms alone at his business, to enter into some athletic sport upon the village-green, by which his limbs will also be exercised! After a lawyer has fagged for a day at a brief, how delightful to be able, by the reading of a new

novel or play, to call up another set of the intellectual powers! In these changes from grave to light occupation, there is at once repose given to the tasked faculty, and the gratification of employment given to others which have been pining for want of something to do.*

It so happens, that, from the sentient nerves being mixed with those which direct the operations of all our organs, each organ has a sense of enjoyment in being rightly exercised. Even the stomach has, from this cause, a gratification when its functions are going on well, and this altogether independent of any pleasure we may have had in eating the meal upon which it is now employed. An organ left long unoccupied, is thus somewhat like a child in a family which its parents have been overlooking. It craves

* These excellent and sensible remarks of the author, show how absurd a notion it is, that works of fiction are essentially pernicious to the mind and heart, and productive of no good whatever. Yet this was the doctrine put forth not long since, by a certain lecturer in New-York. Such short-sighted sciolists always draw their arguments against the use of a thing from the abuse. The imaginative faculties may undoubtedly be indulged until they have gained an unhealthy preponderance over other powers of the mind; and again, the same faculties may be so stunted, that some of the noblest attributes of the human character are lost or degraded. A taste for poetry and imaginative works may be carried to excess; but we think there is far more danger in the present age, of the mind's receiving a tendency to be content with material and unspiritual studies.

to be noticed like the rest, and when the desired notice at length comes, it experiences a high degree of satisfaction. In short, variation of occupation and pursuit, for the purpose of keeping all the parts of the system in harmonious exercise and in healthy tone, is one of the most important principles concerned in the preservation of health.

There are several powers of the mind which must have been designed for the express purpose of creating and receiving amusement, and the existence of which, therefore, shows that amusement has a place in the right economy of human life. The imitative arts, music, fiction, drollery of all kinds, spring directly from primitive faculties of the mind; and when we see the pleasure they give in society, we cannot doubt that they are things naturally required by man, and in which it is quite legitimate for him to indulge within moderate bounds and in circumstances compatible with innocence. These things are doubtless designed to alleviate the burdens of life, and beguile us of its cares. They furnish something like a different sphere of existence, into which we may enter, and temporarily lose the sense of all that harasses us in the ordinary one The *joculator*—under which name our

ancestors associated the poet, tale-teller and mimic, and which we may apply equally extensively to the poet, novelist, artist, and player—is therefore a most useful functionary in society. We say nothing on the present occasion, of the refinement to be derived in addition, from communion with the productions of the higher class of such minds.

Amongst amusements, *reading* takes a most distinguished place, for there is none which may be more readily indulged in, and fortunately in our country, it is one which may be enjoyed by all. It is unquestionably the chief of in-door amusements; and few scenes are calculated to awaken more agreeable feelings in a well-constituted mind, than a family group assembled in their parlour to hear some one of their number reading a pleasant book.

Ever honored be the great masters of fiction, who have allowed us, by these means, to pass from common life, for a time, into "the tale of Troy divine," the story of "the gentle lady married to the Moor," the tear-compelling fate of Ravenswood, and all the other numberless suppositions of things done, and persons who spoke and acted, which we feel to be more real than much of even the life that is passing around us!

Next to reading stands *music*, a means of enjoyment of which only a few comparatively, in our country, take advantage, but which might easily be made much more extensively available, and probably will be so in the course of a few years. Connected intimately with music is *dancing*, which is not only a cheerful amusement, but a positive and direct means of bodily exercise. A family musical or dancing scene, like a family reading scene, is a thing beautiful to look upon. There is a prejudice against both in some minds, on account of their being liable to abuse; *but the abuses of both arise very much from their not being extensively or freely indulged in.*

Were music the general accomplishment, which it might easily be made, it would not only be indulged in on all occasions with simplicity and innocence, but it would supplant coarser and more clandestine amusements. Dancing is the nightly amusement of the French peasantry, and it has never been pretended that these people are less virtuous than the corresponding class in England, Scotland, and Ireland. *Theatrical representations* it might be more difficult to place on such a footing as to secure unhesitating approbation; but certainly, if this

were done, they might prove highly serviceable in furnishing amusement.*

In the class of amusements, we must reckon meetings or promenades in ornamental grounds, excursions in the country, and little tours, all of which are highly commendable in those who are able to indulge in them. The entertainment of little parties of friends, and the going out to entertainments given by them in return, are other means of entertainment in society, and which may be moderately indulged in with much advantage. In short, whatever gives a pleasant variation to the monotony of life, without leading the mind away from duty or corrupting the manners, ought to be indulged in as freely as circumstances will permit. The mind returns from such diversions with renewed tone and power, and neither the time nor the expense is lost in the long run.

* Undoubtedly, theatrical entertainments can be so conducted as to present nothing objectionable to a rational and pious mind. But some worthy people have so strenuously kept up the cry of mad dog against the stage, that they have done all in their power to prevent its showing any healthy symptoms. In spite of this bigotry, we think the drama is destined to be purified and elevated. The abuses which exist in most of the principal theatres in this country and England, are deeply to be regretted as detracting from the usefulness of an institution capable of being made popularly beneficial. Some concerted action on the part of the friends of the drama would soon remedy the evil.

It is the more necessary to impress these maxims, as many well-meaning persons, alarmed perhaps at the occasional abuse of such enjoyments, repudiate them nearly altogether, and thereby lower the tone of their health, both as respects the body and the mind. It is particularly distressing to see such persons exercising a control over the young, and denying to their unfortunate protégés *an element of life not much less pressingly necessary than the air they breathe.*

Dr. Southwood Smith, in his excellent work "The Philosophy of Health," has pointed out that pleasure is the ordinary, and pain in all cases, an extraordinary result of the action of our organs. "There are," he says, "many cases in which pleasure is manifestly given for its own sake; but in no case is the excitement of pain gratuitous." Pain is always a punishment; and, when it reaches a certain extreme, it is destructive of what feels it. But "all such action of the organs as is productive of pleasure is conducive to the perpetuation of life. There is a close connexion between happiness and longevity. Enjoyment is not only the end of life, but it is the only condition of life which is compatible with a protracted term of existence. The happier a human being is, the longer he

lives; the more he suffers the sooner he dies: to add to enjoyment, is to lengthen life; to inflict pain is to shorten existence.

It may fairly be presumed, then, that a certain amount of enjoyment in life is necessary for health, and that when the quantity actually secured is much below that point, unhealthy conditions must ensue. If, for example, poverty or embarrassed circumstances press so severely upon a cautious and conscientious man, as to leave him scarcely a moment's comfort from one year to another, he cannot fail to sink in health. If married to a female of bad temper, or who afflicts him by bad habits, and if, from these causes, he rarely enjoys a moment of happiness, so also must his health fail.

In short, to be placed in any such circumstances as constitute a bar against nearly all enjoyments, must prove injurious, and tend to the shortening of life.

There is, in some enthusiastic minds, a spirit of asceticism and self-mortification which would give up all the enjoyments of life together. Such persons rarely fail to reduce their own health, if they do not also exercise some unhappy control to the same effect over their fellow creatures. While self-denial for moral pur-

poses is always admirable, and over-indulgence of every kind saps the vigour and fortitude of the human character, it should be ever kept in view, that there is great danger in reducing the allowance of comforts and indulgences too low.

Shakspeare, speaking through the lips of Lear, intuitively points out the truth upon which the philosophy of our remarks is founded :

> "Oh, reason not the need! Our poorest beggars
> Are in the poorest things superfluous.
> Oh, give to nature but what nature *needs*,
> Man's life were poor as beast's."

It is little more than a repetition of doctrines already laid down, that, for health, a human being requires an exemption from acute distress of mind and harassing cares.

It is Dr. Smith's opinion, that the nearest cause of many suicides, is not strictly a desire to escape from a state of suffering, but some disease, probably inflammation of the brain, brought on by distress of mind. "By a certain amount and intensity of misery, life may be suddenly destroyed; by a smaller amount and intensity it may be slowly worn out and exhausted. The state of mind affects the physical condition; the continuance of life is wholly depen-

dent on the physical condition; it follows that, in the degree in which the state of the mind is capable of affecting the physical condition, it is capable of influencing the duration of life."

Depression of mind, besides its immediate effect on the nervous system, deranges the respiration and mars the proper oxygenation and circulation of the blood. A diminished vitality is the consequence, often leading to pulmonary consumption.

An excessive agitation and alarm of the selfish feelings, such as takes place in some minds on the approach of an epidemic, affects the whole system in such a way as—to use an expressive phrase of Dr. Combe—"places it on the brink of disease;" and hence the notoriously great liability of persons in this state of alarm and apprehension to fall victims to the malady when it comes. It has been remarked, that an army in a high state of confidence and cheerfulness after a victory, has a much smaller proportion of sick than in the opposite circumstances, or even in its ordinary condition.

A happy, cheerful frame of mind should therefore be cultivated as a moral duty; and those little acerbities of temper so common among men, should be religiously checked and

overcome. Let it be ever remembered, that man, as an organized being, is subject to organic laws as much as the inanimate bodies which surround him, are to laws mechanical and chemical; and we can as little escape the consequences of neglect or violation of those natural laws, which affect organic life *through the air we breathe, the food we eat, and the exercise we take*, as a stone projected from the hand, or a shot from the mouth of a cannon, can place itself beyond the bounds of gravitation.

From all that we have said, it must be evident, that a careful avoidance on the one hand of all that is noxious, and a judicious attention to what is beneficial, are what are chiefly necessary for the preservation of the human frame in health to old age; and that premature deaths, over and above those which result from unforeseen casualties, instead of being, as supposed by the untutored mind, *a mysterious and irrevocable decree of Providence*, are simply the natural effect of our own violation of laws which Providence has appointed for our welfare.

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